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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,735	10/03/2003	Mark A. McHugh	02940313PA	4931

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WHITHAM, CURTIS & CHRISTOFFERSON, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

EXAMINER	
HU, HENRY S	
ART UNIT	PAPER NUMBER
1713	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 10/677,735	**Applicant(s)** MCHUGH ET AL.	
	Examiner Henry S. Hu	**Art Unit** 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *RCE of January 25, 2006*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-31* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *03 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. It is noted that USPTO has received **RCE with its Amendment** filed on January 25, 2006. **Claims 1, 11-13 and 30 were amended, while new Claim 31 was added.** To be more specific, parent **Claim 1** was amended to further limit that the chemical agent is formed as a crystalline solid when it is used in both combining step and permitting step; dependent **Claims 11-13 and 30** were amended to further use either agitating step or masticating step for making such a blend; new dependent **Claim 31** relates to the melting point of chemical agent being higher than the melting temperature used in agitating step or masticating step. The Applicants allege that the support for both amendment and addition on claims can be found on page 7 of Remarks. The examiner accepts the **drawing with only one figure** filed with this application on October 13, 2003. **Claims 1-31 are now pending** with one independent claim (Claim 1). In view of such an amendment with chemical agent being formed as a crystalline solid when it is used in both combining step and permitting step, two 102 rejections are thereby converted to 102/103 rejections. An action follows.

Double Patenting

2. **Claims 1-5 and 7-8 are** provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over **Claims 1-5 and 7-8** of copending

Application No. **10/677,746**, now **USPG-PUB 2005/0075460 A1 to McHugh et al.** (with priority date 10-3-2003 and the same assignee).

As the Applicants allege that action is deferred since co-pending application **10/677,746** has not yet issued as a patent. As discussed earlier, the process of Claims 1-5 and 7-8 of **10/677,746** are found to be **exactly the same as** that of **Claims 1-5 and 7-8** of present application except the use of "polymers". It is noted that polymer is a genus while elastomeric fluoroolymer is a species. **An elastomeric fluoroolymer is a polymer, while a polymer is not necessary to be an elastomeric fluoroolymer.** In view of the statement on specification on **page 5 at lines 9-10**, the polymers of interest in present application may include **most fluoroelastomers, hydrocarbon elastomers, and other amorphous polymers**. Therefore, both applicants are not patentably distinct and an ODP rejection is thereby sustained.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. *The limitation of parent **Claim 1** in present invention relates to **a process for producing homogenous blends of chemical agents and polymers**, comprising:*

*(A) **combining**, **in the presence of a supercritical carbon dioxide**, **at least one polymer** capable of **expansion in the presence of said supercritical carbon dioxide**, which includes **at least one functional group** distributed at one or more locations along its chemical backbone, **with at least one chemical agent** **that forms a crystalline solid**, **which includes at least one functional group**, which is capable of associating with said at least one functional group distributed at said one or more locations along the chemical backbone of said polymer, said combining step permits said at least one chemical agent to impregnate within said at least one polymer;*

(B) ***permitting*** *said at least one functional group on said chemical agent to associate with said one functional group distributed at said one or more locations along the chemical backbone of said polymer, said permitting step* ***producing a blend*** *wherein said at least one polymer is associated with said at least one chemical agent at at least one of said one or more locations along the chemical backbone of said polymer; and wherein said* ***chemical agent is in crystalline form****; and then*

(C) ***separating*** *said* ***supercritical carbon dioxide****.*

See other limitations of dependent ***Claims 2-31****.*

6. Claims 1-31 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U. S. C. 103(a) as being obvious over Daly et al. (US 5,766,522) for the reasons set forth in **paragraphs 8-9 of non-final office action dated 5-20-2005 and paragraphs 7-13 of final ffice action dated 12-23-2005 as well as the discussion below.**

7. Claims 1-31 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U. S. C. 103(a) as being obvious over Mandel et al. (US 5,548,004) for the reasons set forth in **paragraphs 10-11 of non-final office action dated 5-20-2005 and paragraphs 7-13 of final office action dated 12-23-2005 as well as the discussion below.**

8. **Applicants**: Applicants have claimed in parent **Claim 1** an unexpected way of making **homogenous blends of chemical agents and polymers** in the presence of supercritical carbon dioxide. According to this RCE, parent **Claim 1** was amended to further limit as the **chemical**

agent is formed as a crystalline solid when it is used in both combining step and permitting step. To be specific, such a chemical agent in crystalline form is able to effectively impregnate into such supercritical carbon dioxide-induced expanded or swollen polymer (see page **8** top of Remarks), while each of chemical agent and polymer has at least functional group so as to associate with each other to obtain **a homogeneous blend of small crystalline agent particles coated polymer**. Working Examples at pages 11-20 have disclosed various types agents being able to make **homogeneous blends** with polymers in the presence of supercritical carbon dioxide (see page 9 bottom section of previous Remarks).

9. With respect to two 102(b) rejections, Applicants allege that **both Daly and Mandel are not "clearly" including the steps of combining and/or impregnating (for Claim 1) or agitating and/or masticating step (for Claims 11-13 and 30)**. Each of Daly and Mandel has only used the method of nozzle spraying or depressurization (which is NOT the claimed agitating or masticating step) in the last step to produce final blend products, the use of supercritical carbon dioxide fluid is to decrease the viscosity of polymer, such a behavior may be not related with polymer being swollen or not. As **critically** pointed out by the Applicants on page **8** of Remarks, both references are NOT using a chemical agent in crystalline form during the course of or in the final stage of polymer coating. New dependent **Claim 31** is only directed to the melting point of chemical agent being higher than the melting temperature used in agitating or masticating step.

10. **Examiner**: As discussed in earlier two office actions for parent **Claim 1** before RCE, each of Daly and Mandrel references has disclosed producing a coating material in supercritical carbon dioxide media by mixing or blending a mixture of **at least a polymer resin, at least a curing agent and maybe with other additives**; wherein both polymer and curing agent each has carried functional group(s) as specified.

11. With respect to Applicants' key argument on chemical agent being in crystalline form during the course of polymer coating so as to obtain a homogeneous blend, the use of supercritical carbon dioxide media (to decrease viscosity) would have **more or less** dissolved some selected coating components including curing agent(s) (see Daly on column 6 at lines 3-10). The key point is that **such a curing agent may be "inherently" to be "at least partially" present in the crystalline form**. Additionally, such a behavior may be also caused by other factors. For instance, the concentration of such a chemical agent may be oversaturated so that a crystalline aggregation may be formed. Attention is directed to the fact that it is a nature that any solid material would be **at least somewhat in the crystalline form**, the matter is how much is the degree of crystallinity. In a very close examination, the Applicants have not addressed **such a criticality on crystalline form fully in parent Claim 1; unexpected result with comparable examples has also NOT been found in specification**.

12. With respect to Applicants' other argument regarding "each of Daly and Mandel only uses the method of nozzle spraying or depressurization, which is NOT the same as or equivalent to the claimed **combining and/or impregnating** in Claim 1 or the claimed agitating or

masticating step in Claim 11", the rejection remains with following: Mandel have applied such a similar agitation device for working up the polymerization product (particularly see column 3, line 58; column 5, line 1; column 7, line 32). As discussed earlier, nozzle spraying or depressurization may be different from current "agitation" method. However, in the course of preparing for nozzle spraying or depressurization, similar step(s) such as the claimed combining and/or impregnating in Claim 1 or agitating or masticating step in Claim 11 may be needed since it is done within the same supercritical carbon dioxide medium.

13. Present application may have presented some surprising result as some advantages can be obtained such as formation of **free flowing powders** for milling procedures (see page 9 bottom section of previous Remarks). However, it is not included at all in parent Claim 1. It is noted that a surprising result may be just an excellent result and is not necessarily to be an unexpected result. According to MPEP, **unexpected results "cannot" form a basis for rebutting an anticipation rejection under 35 USC "102"**. In re Malgari, 499 F.2d 1297, 1302, 182 USPQ 549.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to a process for producing homogenous blends of **crystallized** chemical agents and functionalized polymers in the presence of supercritical carbon dioxide: US Patent No. **6,407,165 B1 to Wang** et al. only disclose the preparation of elastomeric compositions for damping by adding **an unsaturated damping additive** to a

vulcanizable composition of matter such as **a functionalized polymer resin** (abstract, line 1-5; column 9, line 11-42). However, **supercritical medium is not disclosed or suggested**. Additionally, **such an unsaturated damping additive is not disclosed to be in crystalline form**. Therefore, Wang fails to teach or fairly suggest limitations of present application.

15. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu whose telephone number is (571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The **fax** number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Henry S. Hu
Patent Examiner, Art Unit 1713, USPTO
March 2, 2006

DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700